CLAIMS

[0018] What is claimed is:

- 1. A loop detector comprising a set of entries and an array to store a set of loop iterations, wherein the number of entries in said array is smaller than the number of entries in said loop detector.
- 2. The loop detector as in claim 1, wherein entries in said array are fully associative.
- 3. The loop detector as in claim 1, wherein the set of entries in said array stores a counter to count speculative iterations of said loop.
- 4. The loop detector as in claim 1, wherein the set of entries in said array stores a counter to count real iterations of said loop.
- A method of storing a counter of loop iterations, the method comprising: determining if loop iteration data for a branch is stored in an entry of an array, said array associated with a loop detector; and incrementing a counter in said array entry; wherein the number of entries in said array is smaller than the number of
 - wherein the number of entries in said array is smaller than the number of entries in said loop detector.
- 6. The method as in claim 5, comprising copying a number of actual iterations of said loop into said array entry.
- 7. The method as in claim 5, comprising allocating an entry of said array based on the least recently used entry in said array.
- 8. The method as in claim 5, wherein said incrementing said counter in said array comprises incrementing a counter of actual iterations of said loop.
- 9. The method as in claim 5, wherein said incrementing a sum in said array comprises incrementing a counter of speculative iterations of said loop.
- 10. The method as in claim 5, wherein the entries of said array are fully associative.
- 11. A method of counting loop iterations, comprising storing a counter of loop iterations in an array, wherein entries in said array are associated with more than one entry in a loop detector.
- 12. The method as in claim 11, wherein storing a counter of loop iterations comprises storing a counter of speculative loop iterations.

- 13. The method as in claim 11, wherein storing a counter of loop iterations comprises storing a counter of real loop iterations.
- 14. The method as in claim 11, comprising allocating a branch with an entry in said array based on a least recently used entry in said array.
- 15. The method as in claim 11, wherein storing a counter of loop iterations in an array comprises storing a counter of loop iterations in a fully associative array.
- 16. A processor comprising a loop detector, said loop detector comprising an array to store a counter of loop iterations, wherein entries in said array are capable of being associated with more than one entry in said loop detector at various times.
- 17. The processor as in claim 16, wherein said counter of loop iterations is a speculative counter of loop iterations.
- 18. The loop detector as in claim 16, wherein entries in said array are fully associative.
- 19. A system comprising:
 - a dynamic random access memory unit; and
 - a processor comprising a loop detector, said loop detector comprising an array to store a counter of loop iterations, wherein entries in said array are capable of being associated with more than one entry in said loop detector.
- 20. The system as in claim 19, wherein said counter is to count speculative iterations of said loop.
- 21. The loop detector as in claim 19, wherein said counter is to count real iterations of said loop.